

Easebourne Surface Water Management Plan (SWMP)

Non Technical Summary

What is a SWMP?

Surface Water Management Plans, or SWMPs for short, look at flooding that occurs in response rainfall when:

- Sewers and drains become inundated
- Waterlogged ground leads to runoff from land
- Small rivers and/or ditches overflow
- Water contained within rocks under the ground rises up above the surface (this is called groundwater flooding).

A SWMP sets out a long-term action plan for dealing with types of flooding.

The Easebourne SWMP

The SWMP for Easebourne has been prepared by CH2M HILL on behalf of West Sussex County Council. Work began in Spring 2014 and the final report was issued in January 2015.

The study area is shown in Figure 1 below. This reflects natural catchment boundaries, but was extended slightly to the west in order to include Hollist Lane, which has been subject to notable flooding and soil erosion.

Throughout the development of the SMWP there has been close engagement with key stakeholders. The Easebourne Parish Council (EPC), Environment Agency (EA) Cowdray Estates (as main landowners) and the South Downs National Park Authority (SDNPA) have all provided inputs to the study.

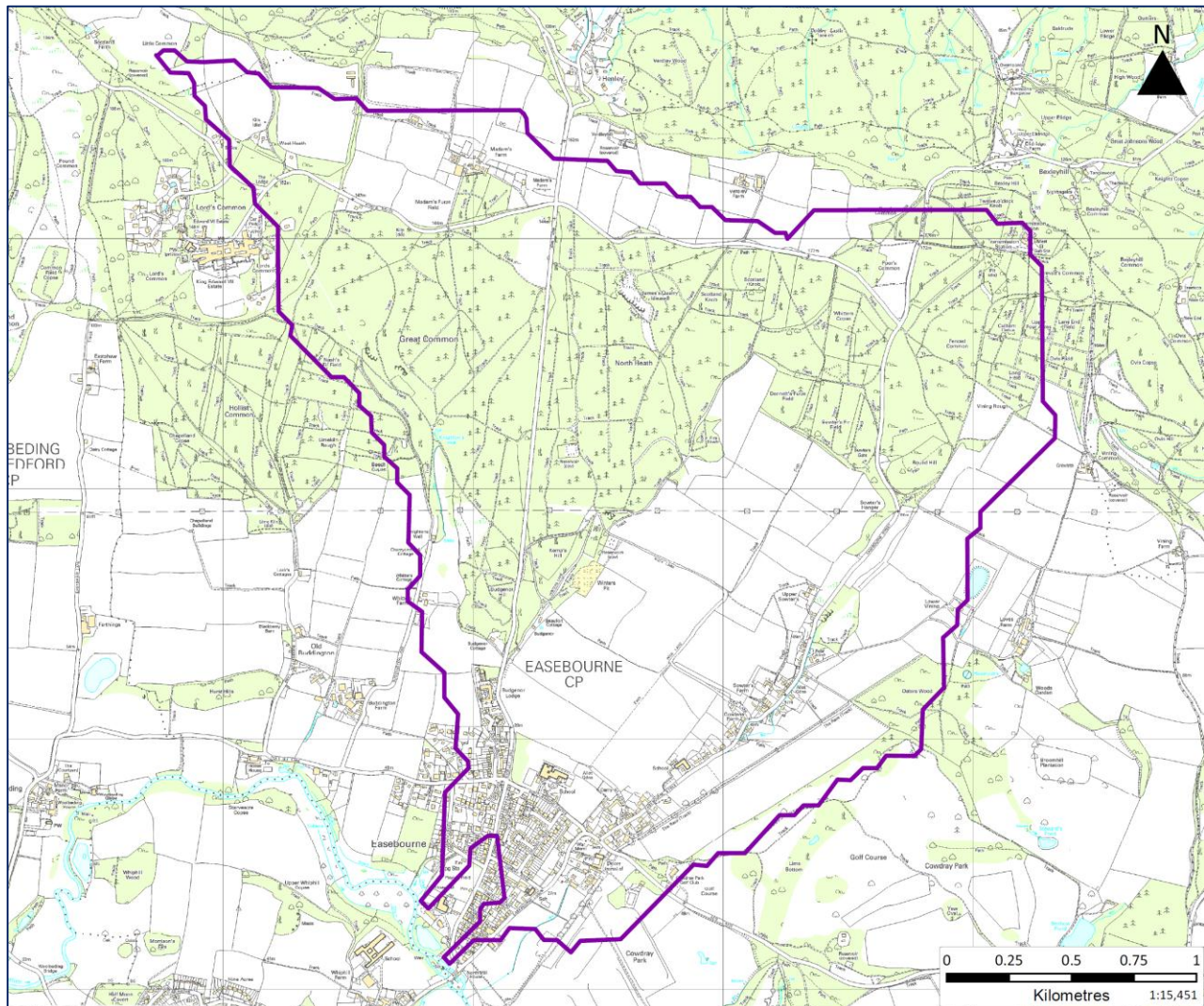


Figure 1 – Easebourne SWMP Study Area

Easebourne Surface Water Management Plan (SWMP)

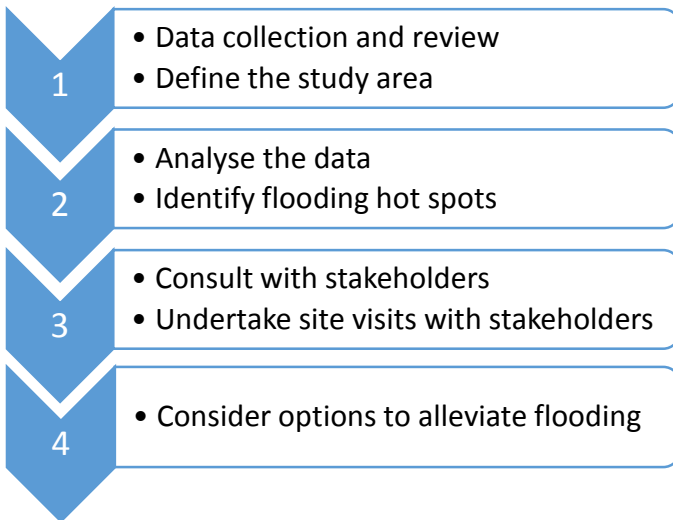
Objectives

The objectives of the Easebourne SWMP were to:

- Identify flood issues within the study area
- Engage with all relevant stakeholders
- Draw on available data to develop an understanding of the nature and mechanisms of the flooding
- Identify possible options to address flood risk
- Recommend actions to be taken forward.

Methodology

The methodology for the project broadly follows the SWMP Technical Guidance published by DEFRA in 2010. The key project stages were as follows:



Data

A wide range of data was analysed to help understand the local flooding issues.

This included data on climate, rainfall, soils and drainage.

This was provided by a range of organisations including:

- West Sussex County Council
- Easebourne Parish Council
- The Environment Agency
- Southern Water
- The Cowdray Estate.

All this information was compiled and mapped using computer based Geographic Information Systems.

Recent flooding issues

There have been several flooding incidents in Easebourne in the past 10-15 years. Events in 2000, 2002, 2004 and 2006 have all been considered as important context for the study.

Specific attention has been paid to the floods that occurred during 2012 and the winter of 2013/14. During these floods a number of properties suffered repeated internal flooding. There was also significant disruption due to flooding on:

- Easebourne Street
- Easebourne Lane (A287)
- Dodsley Lane (A286).

In addition there were widespread issues problems caused by the silt carried by the flood waters which blocked road gullies and pipework.

Section 2 of the main SWMP report provides a full review of past flood events.



Flooding at the bottom of Easebourne Street (Aug 2014)

The impact of flooding

The effects of flooding are often diverse. The following impacts are particularly significant in Easebourne:

- Approximately 10 properties have flooded internally, some of which flood annually
- Significant disruption during flood events as flood water flowing on the A272, A286 and Easebourne Street makes access for residents difficult
- Significant disruption to local residents in the aftermath of a flood event because roads are heavily silted
- Siltation and blockage of road drainage requiring frequent and costly maintenance and clearance
- Closure of the North Mill Bridge during times of heavy rainfall which is a key local road route for access to Midhurst, east to Petworth on the A272, and north on the A286.

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Causes of flooding

Although the soils around Easebourne tend to allow water to soak into the ground (i.e. they are permeable) they do become quickly saturated during heavy rain. This causes water to flow rapidly off farm land and into the surface drainage network.

To the east of the study area this drainage enters the River Ez, which has only limited capacity and therefore becomes quickly overwhelmed. The capacity of the River Ez is particularly constrained at the junction with the A272 (Easebourne Lane). Here, a culvert causes flow to back up causing significant local flooding. The flow of the River is then diverted onto Easebourne Lane, down which it flows, eventually discharging into the River Rother.

In the western part of the study area, the highway drainage system on Dodsley Lane frequently becomes overwhelmed and water flows down the lane until it reaches North Mill Bridge, converges with water on Easebourne Lane and then flows into the River Rother.

In periods of extreme duration rainfall, groundwater also contributes significantly to the overall flow of water.

Across the Easebourne catchment, heavy rain leads to soil erosion and flood waters carry large loads of sediment into the drainage system. This impacts on road and drainage, leads to lost productivity in the farmland and also has an effect on the water quality of the River Rother.



Soil erosion on the fields above Easebourne

Analysis undertaken

A specialist computer model was used to look at extent of possible future flooding. This helped to highlight key issues and confirm some suspicions. For example the model suggests that:

- Flooding on Easebourne Street could occur once or twice a year
- The capacity of the drains on Dodsley Lane (which were designed to take highway drainage not surface run off) is much lower than the flows generated by the catchment.

A soil erosion risk assessment was also undertaken. This shows that, bar one, all the fields in the catchment above Easebourne represent a high or very high risk of soil erosion.

Potential measures

A detailed evaluation process was undertaken to consider the most appropriate future actions to help better manage flood risk and erosion and a “short list” of feasible, practical, deliverable measures was developed.

In brief, the identified measures include:

- **Improved maintenance** of the existing drainage system including highway gullies, silt traps and culverts
- Upstream sediment management, including adoption of new techniques including grassed channels, buffer strips and sediment traps to **reduce soil erosion**. Changes in land use and cropping pattern would also be beneficial alongside these measures. A number of these measures have now been carried out by the landowner, who is monitoring their effectiveness with a watching brief. Further measures will be introduced if and when required
- Minor works at the top of **Easebourne Street** near Wick Lane to improve capacity and improve flow into the River Ez.
- Improvements to the culvert and its intake at the **Easebourne Street/Easebourne Lane Junction** to address backing up, including a new trash screen.
- Identification of individual **property protection** (IPP) measures at the junction of Easebourne Street and the A272
- Works on Easebourne Lane to **manage and divert surface water flows** down the road.
- Improvements to discharge outfalls at the Bottom of **Dodsley Lane**.
- Improved **emergency plans** and response.

These measures are discussed in full in Section 4 of the main SWMP report.

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Funding

If all these measures are adopted, the total cost excluding land management (which is assumed to be the responsibility of the landowner) is approximately £525,000. Only a small part of this (<15%) could be met from DEFRA Grant in Aid funding. Therefore, the balance of funding would have to come from local sources. A number of possible funding streams including WSCC and Easebourne Parish Council have been identified.

Based on the above, an Action Plan has been set out which provides a proposed timeframe for implementing these measures. Assuming funding can be secured, the programme identifies some preliminary surveys through the latter part of 2014, with detailed design proposed during Spring/Summer 2015 and construction elements to follow.

Action Plan

A key output of the SWMP is the Action Plan. A summary of the Action Plan is provided below.

Many of the actions that the SWMP identifies fall to West Sussex County Council. However, a wide range of others have a key role to play in helping to better manage flooding, including:

- The Environment Agency
- Easebourne Parish Council
- The South Downs National Park Authority
- Riparian Owners
- Local residents

It is important that everyone plays a role in helping to better manage flooding in the Easebourne area.

Action	Responsibility	Timescale for action
Develop baseline emergency management approach	WSCC and EPC	Spring/ Summer 2015
Undertake topographic survey in key locations to support design of measures	WSCC	Spring/ Summer 2015
Undertake detailed design of options, which will include consultation and agreements with landowners and local residents. Confirm whether planning permission is required for some measures.	WSCC in consultation with landowners and local residents	Summer / Autumn 2015
Secure funding to implement flood risk measures	WSCC	Summer / Autumn 2015
Secure funding to implement soil erosion measures (As at January 2015, measures have been put in place and a watching brief adopted)	Landowners working with SDNPA and WSCC	Autumn/ Winter 2014 - ongoing monitoring
Construction of soil erosion measures (subject to detailed design, consultation and planning) As above	Landowners	
Construction of flood risk management measures (subject to detailed design, consultation and planning). Owing to complexity it is likely that some of the measures can be progressed more rapidly than others subject to funding.	WSCC	Subject to the above. Target to undertake measures Summer/ Autumn 2015
Refine emergency management approach once flood risk and soil erosion management measures are in place	WSCC and EPC	Winter 2015
Undertake maintenance of highway gullies	WSCC	Annually and following a flooding incident
Agree who should maintain silt traps, River Ez, culvert inlet and culvert, and implement maintenance schedule	WSCC, EPC, riparian owners and local residents	Annually and following a flooding incident
WSCC – West Sussex County Council, EPC – Easebourne Parish Council, EA – Environment Agency SDNPA – South Downs National Park Authority		